

WHAT IS CLAIMED IS:

1. A surge suppressor to suppress transient energy to a load from an ac power supply, comprising:

(a) a diode bridge electrically coupled to the ac power supply for supplying electrical power to the load;

(b) a plurality of capacitor units in a bank electrically coupled to said diode bridge to clamp the transient energy; and

(c) a control unit to safely energize the suppressor and monitor operational status of the suppressor.

2. The surge suppressor of claim 1 wherein said diode bridge comprises a capacitor and a resistor connected in shunt with a switching device to limit a rate of voltage increase across said load when switching from a conducting state to a blocking state.

3. The surge suppressor of claim 2 wherein said capacitor and said resistor limit a peak voltage across said load when said load is subjected to the transient energy.

4. The surge suppressor of claim 1 wherein each said capacitor unit is combined with a parallel resistor to discharge the transient energy until a non-transient operating voltage is obtained.

1 5. The surge suppressor of claim 4 wherein each said combination capacitor
2 unit and parallel resistor contain an overcurrent protective device

1 6. The surge suppressor of claim 5 wherein said overcurrent protective device
2 is a normally-closed, dual element time delay fuse.

1 7. The surge suppressor of claim 6 wherein said control unit comprises a
2 capacitor failure relay controlled by a plurality of said dual element time delay fuse
3 wherein if at least one of said plurality of dual element time delay fuses fails said
4 capacitor failure relay deenergizes and a fuse failure indicating device is energized.

5 8. The surge suppressor of claim 1 wherein said control unit comprises a
6 plurality of phase loss relays electrically connected to a three-phase ac power
7 supply to indicate that a supply voltage is within a normal tolerance.

1 9. The surge suppressor of claim 8 wherein said plurality of phase loss relays
2 are connected in series with an auxiliary control relay such that a phase loss
3 condition will cause said auxiliary control relay to open.

1 10. The surge suppressor of claim 9 wherein said auxiliary control relay has a
2 contact connected to a timing relay which ensures that said plurality of capacitor
3 units in a bank are precharged prior to closing a bypass contactor.

1 11. The surge suppressor of claim 9 wherein said control unit comprises a reset
2 element in series with said auxiliary control relay to reset the surge suppressor in
3 the event of a phase loss condition.

1 12. The surge suppressor of claim 11 wherein said reset element is a selector
2 switch.

1 13. A surge suppressor to suppress transient energy to a load from an ac power
2 supply, comprising:

3 (a) a diode bridge electrically coupled to the ac power supply for
4 supplying electrical power to the load;

5 (b) a plurality of capacitor units in a bank electrically coupled to said
6 diode bridge to clamp the transient energy;

7 (c) a control unit to safely energize the suppressor and monitor
8 operational status of the suppressor; and

9 (d) a precharge unit electrically coupled to said plurality of capacitor units
10 for limiting an inrush current into said plurality of capacitor units upon initialization
11 of the surge suppressor.

1 14. The surge suppressor of claim 13 wherein said diode bridge comprises a
2 capacitor and a resistor connected in shunt with a switching device to limit a rate of
3 voltage increase across said load when switching from a conducting state to a
4 blocking state.

1 15. The surge suppressor of claim 14 wherein said capacitor and said resistor
2 limit a peak voltage across said load when said load is subjected to the transient
3 energy.

16. The surge suppressor of claim 13 wherein each said capacitor unit is
combined with a parallel resistor to discharge the transient energy until a non-
transient operating voltage is obtained.

17. The surge suppressor of claim 16 wherein each said combination capacitor
unit and parallel resistor contain an overcurrent protective device